

(19) Federal Republic
of Germany

(12) **Offenlegungsschrift**
(10) **DE 196 17 224 A1**

(51) Int. Cl.⁶:
A 01 K1/015
A 01 K 23/00
C 05 F 3/00
C 09 K 3/32
C 09 K 17/16
B 01 J 20/24

German Patent
Office

(21) File No.: 196-17,224.1
(22) Application Date: April 30, 1996
(43) Disclosure Date: November 6, 1997

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(54) Title of the Invention:

LITTER FOR ANIMALS AND PRODUCTS OBTAINED THEREFROM

(57) Abstract:

The invention pertains to a litter for animals using plant-based materials. The present invention consists in that the litter is in the form of solid elements, which consist essentially of the residue from plant-based substances which are naturally rich in polysaccharides and which have a high absorption capacity, these substances having been subjected beforehand to a treatment to extract the pectin.

Description

The invention pertains to an organic litter for animals, especially for cats, and also to its use in agriculture, especially as a plant-based or organic soil improving-agent for fertilizing soil.

At the present time, litter is essentially of two types, a distinction being made between plant-based and mineral-based litters. During recent years, an important development has occurred in the field of mineral-based litter, in that the level of contaminants in it has been reduced. This type of litter usually consists of mineral components, especially clay components.

Plant-based litter, on the other hand, consists essentially of wood fibers or wood chips. This type of litter also contains contaminants, however, which are able to cause problems in animals. In addition, plant-based litter has relatively mediocre absorption properties. As a result, it must often be changed, which leads to a proportionate increase in cost.

In recent years, furthermore, plant-based litters based on by-products of corn, on by-products of the plant family of the Cannabinaceae (hemp plants), and on fruit pulp have been developed, as described in, for example, FR-A 2,459,612 and in EP-A-022,010. Nevertheless, the litter described in the latter patent cited above must be produced from grape flesh and must be recovered from the press cake by extraction with alcohol and tartaric acid, followed by neutralization and a washing and a drying process. Because of these mechanical and chemical separation processes, the costs of a litter of this type are very high. In this patent, the task was based on the problem of removing all the hard and fibrous components present in the fruit. This, however, is not a characteristic of a litter which is the object of the present invention, in which fibrous materials with good absorption capacity for moisture are used. When standard litter components are expanded with water, they break apart to a limited extent, which causes the litter to lose some of its structure; this process is retarded in the fibrous litter according to the invention. As a result, this litter has a longer service life. In addition, the litter is highly marketable, because it uses products which are not otherwise recyclable at present.

The present invention is therefore based on the task of providing a litter for animals, especially for cats, which is characterized in that it is in the form of solid elements, which consist essentially of residues of plant substances which are naturally rich in polysaccharides and to this extent have a high absorption capacity, especially after they have been subjected to a treatment to extract the pectin.

According to a preferred embodiment of the present invention, the plant-based substances in question consist of apple press cake and lemon press cake, which are preferably dried and used either as mixtures or as individual components.

The invention is explained in greater detail below on the basis of exemplary embodiments.

The litter for animals according to the invention is made up of solid components, which consist essentially of residues of plant-based substances which are naturally rich in pectin before they have been subjected to a process designed to extract the pectin.

The treatment to extract the pectin, which is referred to in the following as "depectinization", leads to a litter which has at least two essential features. The first feature is that the litter is "depectinized", which means that a litter is produced which has a significantly reduced sugar content or which contains only a very small amount of fermentable components.

Second, the components of the litter are also rich in cellulose compounds and to this extent have a high absorption capacity. After these components have been "depectinized", they usually have a residue of pectin on the surface, which, when in the free state, is able to absorb odors efficiently.

These elements are used in variable form in the solid state. In fact, these elements can be present in the form of extruded sections with an essentially constant cross section, thus assuming the form of pellets or preferably the form of grains, cylinders, etc. The size and shape of these elements will vary with the function they are to serve at their intended location, and the residues can be used either in the form of mixtures or as individual components. Suitable plant substances include apple press cake, preferably dried; citrus press cake, especially that of lemons and oranges, especially citrus peels; and the press cake of vegetables, especially of sugar beets, preferably chipped, etc. These substances are preferred because of their high content of pectin and their availability. The following example pertains in particular to apple press cake and to lemon press cake. Because of its high content of polysaccharides such as hemicellulose and pectin, apple press cake is preferred, this being a material with a high absorption capacity for water and urine, as a result of which a litter is obtained which is of particular interest for economic reasons, even after most of the pectin has been extracted. The apple press cake which is used within the scope of the present invention is a by-product of the extraction of pectin from dried apple press cake. It therefore has a relatively low pectin content. Nonetheless, this residual pectin content is sufficient to offer an absorption capacity for water and urine which is significantly greater than that of standard litter. The apple press cake which is used according to the invention can, for example, be obtained by the pectin extraction method described in French Patent FR-A-2,463,153. The apple press cake is thus subjected to a washing step as it is being stirred, and mineral acids, at least, are added to remove the pectin from the press cake. The patent FR-A-2,193,833 describes a different extraction method. Regardless of the extraction method, the press cake used according to the invention is in the form of a paste or slurry after the pectin has been extracted.

This press cake is obviously in the form of a slurry and must therefore, so that it can be used as an essential element of a litter, subjected to a certain number of mechanical and/or chemical treatments to convert it from a semi-liquid state to a solid or semi-solid state and then to shape it in such a way that the final composition consists of elements of uniform size and shape.

All these mechanical and chemical processes used to convert a liquid or semi-liquid material into a solid or semi-solid material are already known and can be carried out within the scope of the present invention.

For costs reasons, furthermore, a dehydration or a drying of the press cake is preferred. This drying operation can be conducted directly in the extractor with the use of the reaction heat from the extraction of the pectin. At the same time as or after the conversion of the material to a solid state, it is necessary to shape the material to obtain a composition of litter elements of relatively homogeneous size and shape. The shaping operation which is carried out within the scope of the present invention consists of the extrusion of the dehydrated slurry or of the dried material which has been obtained after the conversion of the material from the semi-liquid to the semi-solid or solid state. This dehydrated slurry has a moisture content of usually less than 10% in order to prevent any fermentation problems. The dehydrated slurry fed to the extruder makes it possible to produce pellets, that is, elements which have an essentially cylindrical appearance, and which are of a size which depends on the place where the litter is

to be used. Other shaping methods can also be considered. According to a first shaping process, it is possible to add different components, especially odorants (fragrances or perfumes) and disinfectants in a manner known in and of itself, which, for example, are present in the form of a powder on the elements. It is also possible to add odorants and/or disinfectants in the form of powder and/or liquid to these substances, adding them to the composition before the shaping process.

These elements produced from apple press cake or lemon press cake have an absorption capacity for water and urine which is at least 5 times greater than the absorption capacity of standard litter. These properties are attributable essentially to the presence of pectin and hemicellulose, the molecules of which are hydrophilic.


In addition, it can be established that, because of the relatively high content of hemicellulose, the tendency of the elements which have been expanded by the absorption of water or urine to collapse is slowed down. The slowing-down of this collapse is caused by the specific interlinking of the fibers formed by the hemicellulose molecules. This phenomenon cannot be observed in conventional litter based on cellulose, which is made up of hydrophobic molecules. The slowing down of the collapse increases the service life of the product. Fruit press cake, especially the residue from apples, is therefore of interest from two different standpoints. First, it provides a very high absorption capacity for water and urine, and, second, it retards the breakdown of certain components of the litter. These two factors prolong the service life of the product and thus lead to a reduction in cost.

It is also possible to work in some cases with mixtures of press cakes (such as those from lemons and apples) in order to achieve an effect attractive to the eye.

Of course, the litter, mixed with animal impurities (excrement), can then be allowed to ferment for a variable period of up to several weeks, so that it can then be used as a plant-based, organic soil-improving agent for fertilizing the soil.

The object of the present invention is therefore also a plant-based, organic soil-improving agent as defined in the claims.

Claims

1. Litter for animals, especially for cats, **characterized in that** it is in the form of solid elements which consist essentially of residues of plant-based substances which are naturally rich in polysaccharides and have a high absorption capacity, these substances being subjected first to a process to extract the pectin.
 2. Litter according to Claim 1, characterized in that said plant-based substances are fruit press cakes, especially apple press cake, preferably dried, used in the form of either mixtures or individual components.
 3. Litter according to Claim 1, characterized in that said plant-based substances are based on a citrus press cake or on the basis of the citrus peels, used in the form of either mixtures or individual components.
 4. Litter according to Claim 1, characterized in that the substances are vegetable press cakes, used in the form of either mixtures or individual components.
 5. Litter according to one of Claims 1-4, characterized in that said plant-based substances are sugar beets, preferably chipped, used in the form of either mixtures or individual components.
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6. Litter according to one of Claims 1-5, characterized in that said solid elements are in the form of extruded sections such as pellets with an essentially constant cross section.
7. Litter according to one of Claims 1-6, characterized in that said residues are subjected simultaneously or in succession to at least one process for converting them from a slurry to the solid or semi-solid state and to at least one shaping step conducted in such a way that a composition of elements of essentially the same size and shape is obtained.
8. Litter according to one of Claims 1-7, characterized in that the elements are obtained by extrusion of the previously dehydrated residue.
9. Litter according to one of Claims 1-8, characterized in that said elements also contain additives, which consist of odorants and/or disinfectants.
10. Plant-based, organic soil-improving agent for fertilizing soils, characterized in that it contains a litter according to one of Claims 1-9, mixed with animal excrement, obtained after storage for fermentation for a variable period of time.